

Spot Safety Project Evaluation

Project Information

| | |
|---------------------|---|
| Order ID: | 41000028081 |
| Project ID: | 10-06-203 |
| Location: | SR 1315 (New Town Road) and SR 1309 (Crane Road) |
| County: | Union |
| City: | Waxhaw |
| Division: | 10 |
| Signal ID: | 10-1996 |
| Countermeasure: | Install two phase fully actuated traffic signal and construct left turn lanes on all four approaches. |
| Project Completion: | July 10, 2009 |
| Project Cost: | \$350,000 |

Map and Aerial (from Google Maps, Coordinates are -- 34.991824, -80.798371)



Naive Before and After Analysis

- Before Period: July 1, 2003 through June 30, 2006 (3years)
Note- Analysis begin date limited by initial left turn lane installation in 2006
- Const. Period: July 1, 2006 through February 28, 2009
Note: Construction period was adjusted based on when signal and left turn lanes appeared in crash reports
- After Period: March 1, 2009 through March 31, 2014 (5 years, 1 month)
- Analysis Criteria: Treatment data consisted of all crashes within 150 feet of the subject intersection for the SR 1309 and SR 1315 approaches.
- Target Crashes: Frontal Impact Crashes. Please note that Frontal Impact Crashes were the target crashes for the applied countermeasure. Frontal Impact crashes include: Left turn, same roadway; Left turn, different roadways; Right turn, same roadway; Right turn, different roadways; Head on; and Angle.

| <u>Treatment Information</u> | Before (3 yrs) | After (5 yrs, 1 mo) | Percent Reduction (-) Percent Increase (+) |
|------------------------------|---------------------------|--------------------------------|---|
| Total Crashes | 20 | 8 | N/A |
| Crashes Per Year | 6.7 | 0.6 | - 91.0 % |
| Total Severity Index | 8.49 | 1.92 | - 77.4 % |
| | | | |
| Target Crashes | 19 | 5 | N/A |
| Target Crashes Per Year | 6.3 | 0.98 | - 84.4 % |
| Target Crash Severity Index | 8.88 | 2.48 | - 72.1 % |
| | | | |
| Volume (2004, 2011) | 6,200 | 14,400 | + 132.3 % |

| <u>Injury Crash Summary</u> | Before (3 yrs) | After (5 yrs, 1 mo) | Percent Reduction (-) Percent Increase (+) |
|---------------------------------|---------------------------|--------------------------------|---|
| Fatal injury Crashes per Year | 0.3 | 0.0 | - 100.0 % |
| Class A injury Crashes per Year | 0.0 | 0.0 | N/A |
| Class B injury Crashes per Year | 2.0 | 0.0 | - 100.0 % |
| Class C Injury Crashes per Year | 1.3 | 0.2 | - 84.6 % |
| Property Damage Only per Year | 3.0 | 1.4 | - 53.3 % |

| <u>Additional Information</u> | Before (3 yrs) | After (5 yrs, 1 mo) | Percent Reduction (-) Percent Increase (+) |
|---|---------------------------|--------------------------------|---|
| Angle Crashes per Year (Target) | 4.7 | 0.6 | - 87.2 % |
| LTSR Crashes per Year (Target) | 0.7 | 0.4 | - 42.9 % |
| | | | |
| Southbound-Westbound Angle Crashes per Year | 1.7 | 0.2 | - 88.2 % |
| Southbound-Eastbound Angle Crashes per Year | 1.7 | 0.0 | - 100.0 % |

Overall Summary Results

| | | |
|----------------------------|---------|-------------|
| Total Crashes (per year): | - 91 % | (reduction) |
| Total Crash Severity: | - 77 % | (reduction) |
| Target Crashes (per year): | - 84 % | (reduction) |
| Target Crash Severity: | - 72 % | (reduction) |
| Volume: | + 132 % | (increase) |

Additional Summary Results

| | | |
|-----------------------------------|--------|-------------|
| Angle (Target): | - 87 % | (reduction) |
| Left Turn, Same Roadway (Target): | -43 % | (reduction) |

Items for Discussion/Concerns

The intersection experienced an 87 percent reduction in angle crashes (4.7 crashes per year to 0.6 crashes per year).

The intersection experienced an elimination of southbound-eastbound angle crashes from the before period to the after period (1.7 crashes per year to 0.0 crashes per year).

Data Prepared For

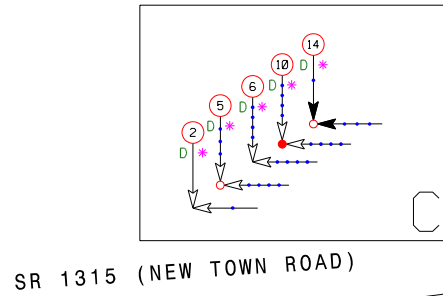
The Traffic Safety Unit *of the*
Transportation Mobility and Safety Division *of the*
Division of Highways *of the*
North Carolina Department of Transportation

Data Prepared By

Principal Investigator: Kellie Reep, PE
Work Group/Consultant: Stantec Consulting Services Inc.
Date: May 16, 2014

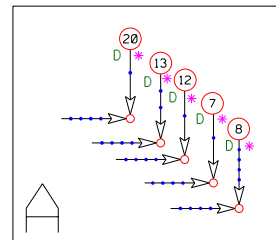
SS# 10-06-203
 Order# 41000028081
 Union County
 BEFORE Period
 7/1/03 - 6/30/06

| LEGEND | | | |
|--------|-----------------|--|-------------------|
| | MOVING VEHICLE | | ANGLE |
| | PAKED VEHICLE | | TURNING |
| | PARKING VEHICLE | | BACKING |
| | MOVABLE OBJECT | | SIDESWIPE |
| | HEAD ON | | INJURY |
| | REAR END | | FATALITY |
| | RAN OFF ROAD | | 9 MPH OR LESS |
| | DAYLIGHT CRASH | | 10 MPH TO 19 |
| | NIGHT CRASH | | 20 MPH TO 29 |
| | | | 30 MPH TO 39 |
| | | | 40 MPH TO 49 |
| | | | 50 MPH TO 59 |
| | | | 60 MPH TO 69 |
| | | | 70 AND UP |
| | | | SPEED UNKNOWN |
| | | | A ANIMAL |
| | | | P PEDESTRIAN |
| | | | B BICYCLE |
| | | | T TRAIN |
| | | | * DRIVER AT FAULT |
| | | | D DRY |
| | | | W WET |
| | | | I Icy or SNOWY |
| | | | O Other |



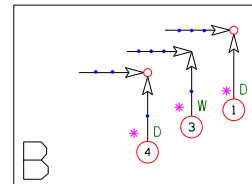
SR 1315 (NEW TOWN ROAD)

ADT (Year)
 45 mph 5,200 (2004)



SR 1309 (CRANE ROAD)

ADT (Year)
 45 mph 1,465 (2004)



ADT (Year)
 45 mph 3,800 (2004)

SR 1315 (NEW TOWN ROAD)

Note: The before and
 after time periods
 are not equal

Frontal Impact
 Target Crashes

N.C. DEPARTMENT of TRANSPORTATION
 DIVISION of HIGHWAYS
 TRANSPORTATION MOBILITY and
 SAFETY DIVISION

Date: 5/16/2014

Prepared By: ESS



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*Crash 17 is shown as an angle crash as this was the movement that led the to subsequent crash

SS# 10-06-203
 Order# 41000028081
 Union County
 AFTER Period
 3/1/09 - 3/31/14

| LEGEND | | | |
|--------|----------------|--|-------------------|
| | MOVING VEHICLE | | ANGLE |
| | PARKED VEHICLE | | TURNING |
| | MOVABLE OBJECT | | BACKING |
| | HEAD ON | | SIDESWIPE |
| | REAR END | | INJURY |
| | RAN OFF ROAD | | FATALITY |
| | DAYLIGHT CRASH | | 9 MPH OR LESS |
| | NIGHT CRASH | | 10 MPH TO 19 |
| | | | 20 MPH TO 29 |
| | | | 30 MPH TO 39 |
| | | | 40 MPH TO 49 |
| | | | 50 MPH TO 59 |
| | | | 60 MPH TO 69 |
| | | | 70 AND UP |
| | | | SPEED UNKNOWN |
| | | | A ANIMAL |
| | | | P PEDESTRIAN |
| | | | B BICYCLE |
| | | | T TRAIN |
| | | | * DRIVER AT FAULT |
| | | | D DRY |
| | | | W WET |
| | | | I ICY OR SNOWY |
| | | | O Other |

SR 1315 (NEW TOWN ROAD)

ADT (Year)
 45 mph 11,000 (2011)

ADT (Year)
 45 mph 3,600 (2011)

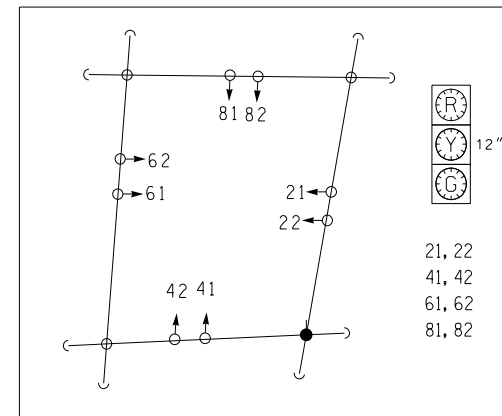
SR 1309 (CRANE ROAD)

ADT (Year)
 45 mph 7,500 (2011)

SR 1315 (NEW TOWN ROAD)

SR 1309 (CRANE ROAD)

ADT (Year)
 45 mph 6,700 (2011)



Frontal Impact
 Target Crashes

Note: The before and
 after time periods
 are not equal

N.C. DEPARTMENT of TRANSPORTATION
 DIVISION of HIGHWAYS
 TRANSPORTATION MOBILITY and
 SAFETY DIVISION

Date: 5/16/2014

Prepared By: KLR



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